

DRILLING & EXPLORATION WORLD

November 2011

DEW

INTERNATIONAL EDITION

Volume 21 Number 01

THE COMPLETE ENERGY JOURNAL

IN PUBLICATION SINCE 1989

ISSN - 0971 - 7242

dewjournal.com

SERCEL "UNITE" CABLELESS
RECORDING EQUIPMENT

**SIMPLIFYING COMPLEX
SEISMIC ACQUISITION**



A new generation of diverless subsea connectors has been developed by Aker Solutions, making the installation of subsea systems in deep water easier, faster and more reliable.



Staying Connected

SPECIAL ISSUE:
Shale Gas,
Subsea / Deepwater Technology

Exploration and Beyond...

Kelly Richards, Head-Marketing and Quality, WGP Group

For over two decades WGP has been providing seismic solutions to the global upstream oil and gas industry for projects in often restricted and complex marine environments. Such operations have required a certain skill set that is thriving in WGP, where both project and operational management is delivered with the ability to bring contemporary technical knowledge. Such proficiency has gained it a recognised reputation for taking clients' ideas and turning them into safe and attainable operations.

Operating as a successful independent British company, based near Bude on the North Cornish Coast, the company goes against the grain compared to the sector's

mainstream contractors. It has instead maintained an efficient and effective structure to allow it to act as a nimble and reactive organisation, securing a unique position; by not being a competitor to the larger service companies WGP is seen as a collaborator, a seismic solutions provider.

Life of field seismic

WGP's expertise spans across the Exploration sector discovering new hydrocarbon reserves, and Beyond, into production, offering services designed to increase the value and output of active reservoirs. Key services include providing time-lapse

3D (4D seismic); this full acquisition service is aimed at optimising oil or gas recovery through reservoir management practices also known as Life of Field Seismic (LoFS). By performing repeated surveys at intervals across the production life of an oil or gas field, the behaviour of reservoirs and fluids can be monitored. With increasing demands on energy supplies, LoFS is a proven and essential reservoir management tool. With operational performance since 2003, WGP first became involved in this segment when

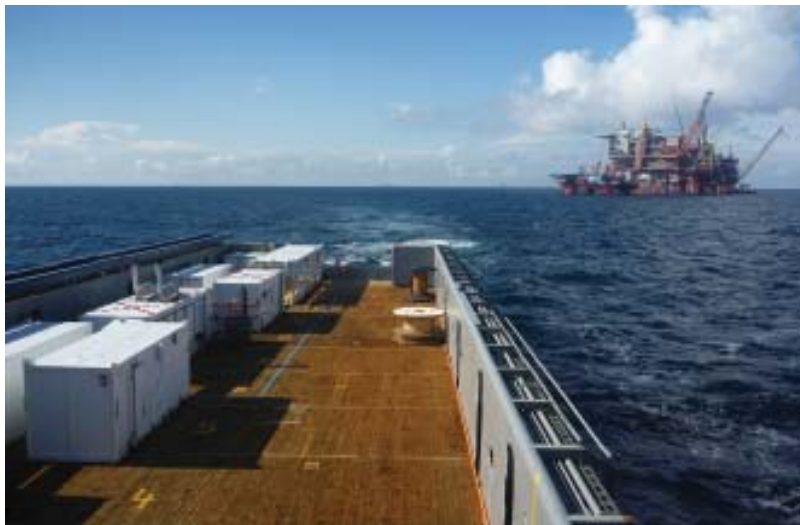


Lead in handling with ROV



One of the world's largest re-deployable LoFS 4C/4D OBC systems in operation

contracted by BP for its Valhall LoFS project in the North Sea. BP had installed a trenched ocean-bottom cable (OBC) system and required a modularised/containerised seismic source with which to carry out repeat surveys. BP contracted WGP to design and operate the system whose modular units comprised a high pressure air compressor, gun-handling frame and umbilical winch for deployment, air gun array and instrument room.



Contracted to procure and operate the on-going seismic service over 45 km² of trenched OBC for BP's LoFS project

Portable modular seismic source - seismic on demand

WGP, together with its investment partner Thalassa Energy Services, continues to supply a Portable Modular Seismic Source (PMSS™) system for the Valhall project. The PMSS™ is a containerised source with a 2,000in3 airgun array, which can be installed or offloaded onto an oilfield supply vessel within 12 hours. WGP is currently contracted to

perform the next 7 bi-annual surveys; the first, LoFS 12, was completed in 2010, with LoFS 13 and 14 surveys acquired in 2011.

As the need to optimise and maximise extraction rates from hydrocarbon reservoirs increases, there is a high probability that there

will be an increase in the deployment of ocean bottom seismic technologies for reservoir monitoring. Not only do they offer improved repeatability and signal-to-noise performance when compared to towed systems, but also offer the ability to acquire four component data. The PMSS™

Exploration and beyond is the ethos behind WGP, a marine geophysical company committed to developing services and solutions towards the next generation of energy supplies.



WGP assisted the ION GeoVentures group with their on-going Arctic exploration programme



MOB boat drill, Baffin Bay



Unreliable existing sea charts meant the water depth was measured and monitored by the chase boat, Gulf of Aden, Somaliland

provides a portable source for either trenched or re-deployable OBC spreads that can be deployed quickly onto existing vessels to minimise any downtime associated with the mobilisation/demobilisation for repeat surveys.

A PMSS™ solution is also ideal for other work requiring a portable source. In August 2011 WGP assisted ION GeoVentures with a proprietary survey in the Russian sector of the Arctic whereby components of the PMSS™ were provided for installation on a vessel of opportunity. This included providing the source array, recording office and

source workshop in addition to supplying full technical crewing required for the entire seismic programme.

Project management

The vessel utilised by ION was selected due to its ice-class and research capability, which required a custom designed deployment configuration which was completed by WGP's Engineering Department and implemented under the supervision of field crew. In this instance, the Annual Port Guns (AGP) utilised in the PMSS™ were ideally suited to the deployment

methodology of the operation whereby conventional tow plates, spreader bars and external air and electrical lines are negated. The PMSS' self contained Instrument Room and Gun Workshop modules were quick and efficient to install providing instantaneous onboard facilities for the operation.

The PMSS™ systems operated by WGP were originally designed and constructed to target the Permanent Reservoir Monitoring (PRM) market; however WGP's innovative approach and the flexibility of the equipment allowed it to be modified to produce a custom source solution for ION. This operation illustrates the extensive possibilities offered to potential clients considering using the PMSS™ components.

Ocean bottom seismic

Following the success of LoFS operations in the North Sea, BP as operator of the AIOC (Azerbaijan International Operating Company) partnership, decided to install a LoFS system on the giant Azeri Chirag Guneshli oil field complex in the Caspian Sea. The project, known as CARSP, (Chirag Azeri Reservoir Seismic Project) utilises a re-deployable Ocean Bottom Cable (OBC) system working in 400 -500m water depths. A re-deployable spread is used rather than a trenched cable, this is part due to the extent of the producing area and high in-field activity.

WGP is contracted as the Lead Service Provider for CARSP, service requirements have been to design, install and operate a modularised system for deployment from a single multi-purpose vessel. The current system will deploy and retrieve some 140 km of cables (132 km of 4C receivers plus connecting cables) and shoot from the same vessel. A key component of this system is the

Remotely Operated Vehicle (ROV) that ensures receiver touchdown to accuracy of 2m and also completes the subsea cable connections.

Building on WGP's experience performing Ocean Bottom Seismic (OBS) techniques in pursuit of LoFS projects, this same knowledge and aptitude is transferable to many exploration activities. WGP has proven capability supplying a full service OBS including seismic source systems with either, or a combination of Ocean Bottom Cables or Ocean Bottom Nodes to resolve geophysical challenges in obstructed or restricted areas.

WGP has been involved with CARSP since 2006 and has had the opportunity to flourish and excel during the life of the project. One of the reasons for success is no doubt due to the close working relationship personnel engaged with the project have developed with BP, together with being reactive and nimble as changes and developments during the project dictated.

Seismic solutions for lake seismic acquisition

WGP has developed a particular skill set to be able to offer Lake Seismic Acquisition services for global niche projects. Whilst efforts are pursued to enhance recovery from existing known reserves, in unison the need to discover new and unexploited hydrocarbon reserves is resulting in frontier exploration in the world's more remote and challenging regions. The operational team has been at the forefront in this type of niche seismic exploration for the last ten years. A contemporary example of where bespoke solutions are required is illustrated with the company's most recent venture with Surestream Petroleum; an independent, UK based E & P company with interests in sub-Saharan Africa, and specifically on

WGP's ability to execute bespoke solutions working in challenging environments is further demonstrated through the frontier marine 2D projects which the company has completed. In 2007 the company was contracted by TGS-Nopec to acquire some 15,000km of seismic offshore Greenland in Baffin Bay. This regional survey extended from the East coast of Canada to the west coast of Greenland where the majority of its 692,000km² surface area deep being well within the Arctic Circle. Inherently, the survey was prone to temperatures below -28°C and dense iceberg fields from the Arctic pack ice. WGP's vessel was the first commercial 2D seismic operation to both complete a survey campaign off Baffin Bay and acquire the most northerly seismic data at the time



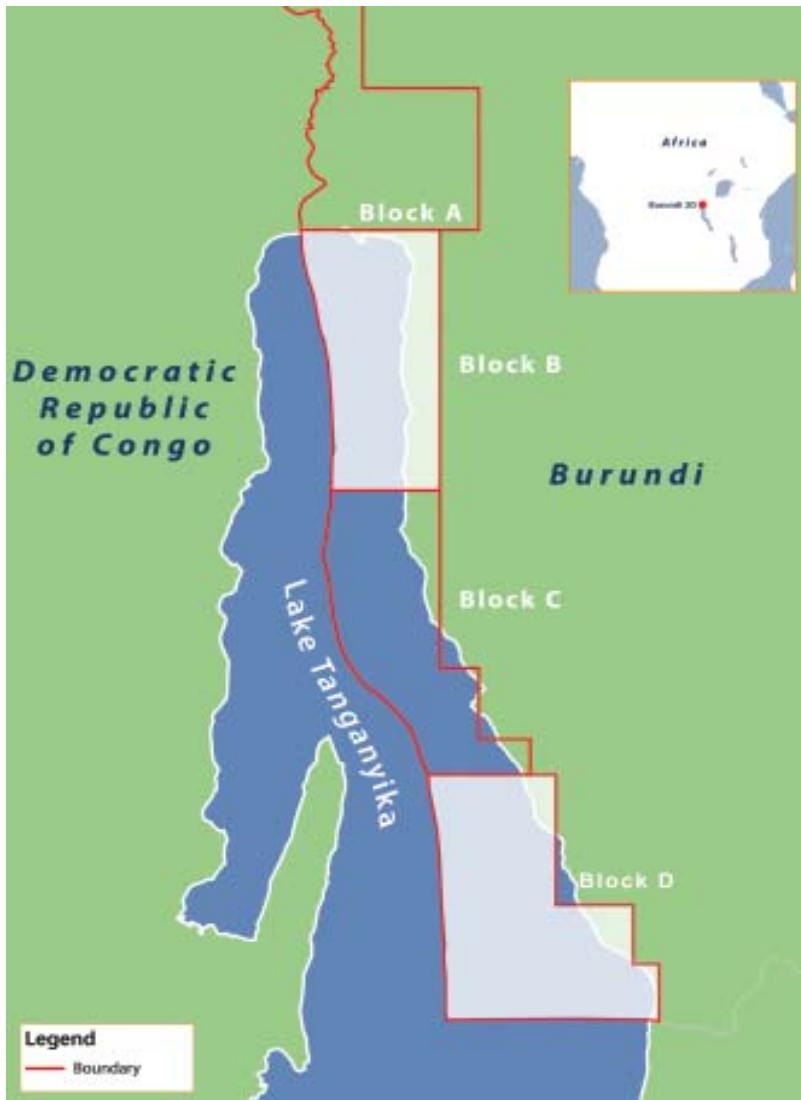
Ex-UN fisheries vessel the "Tanganyika Explorer" pre conversion to a 2D seismic vessel



WGP was first contacted by Surestream Petroleum to carry out an extensive feasibility study in preparation of the project



Artist's impression of the Tanganyika Explorer post conversion to a 2D seismic vessel



Surestream Petroleum has been awarded Blocks B and D on the lake

the Burundian sector of Lake Tanganyika (the longest fresh water lake in the world) where the company is the sole operator of Blocks B & D. The operation involves the conversion of the 'Tanganyika Explorer', a former fisheries survey vessel originally designed for environmental and pelagic zone studies on behalf of the UN, into a 2D Seismic vessel for data acquisition projects. Procurement stages for the project began August 2011, and the vessel will be upgraded to meet international marine and geophysical operating standards and requirements. The conversion includes vessel stability works and seismic outfitting, with the final objective of achieving a vessel capable of acquiring 2D reflection seismic with a 3,000m streamer and 500in3 source. First acquisition is projected for the second quarter of 2012. The conversion will provide the optimal technical solution on the lake for the client. The recent upgrades to the slipway and vessel lifting equipment at Kigoma by the Tanzanian Authorities will be utilised to facilitate the conversion phase of the project.

Feasibility studies

WGP was initially contracted by Surestream to perform a feasibility study in preparation for the project in 2010. The company was engaged on its merits of capability of applying innovative solutions to this challenging area, bringing both the experience and the proactive work ethic required to execute a safe, efficient and successful operation on a remote inland lake. Each Lake Seismic Acquisition project necessitates individual review and bespoke solutions developed to ensure that both clients' requirements are fulfilled without compromising protection of the sensitive natural

environment.

Frontier 2D marine seismic

WGP's ability to execute bespoke solutions working in challenging environments is further demonstrated through the frontier marine 2D projects which the company has completed. The company has been involved with a number of ground breaking industry firsts driven by the increasing demand to survey remote and restrictive environments. For example, in 2007 the company was contracted by TGS-Nopec to acquire some 15,000km of seismic offshore Greenland in Baffin Bay. This regional survey extended from the East coast of Canada to the west coast of Greenland where the majority of its 692,000km² surface area deep being well within the Arctic Circle. Inherently, the survey was prone to temperatures below -28°C and dense iceberg fields from the Arctic pack ice. WGP's vessel was the first commercial 2D seismic operation to both complete a survey campaign off Baffin Bay and acquire the most northerly seismic data at the time. The extensive mitigation measures that were implemented to allow the vessel to operate in Arctic waters enabled the crew to achieve a remarkable acquisition average of over 100km of full fold data per day; over the course of two seasons 15,570km was acquired successfully without incident.

WGP continued its relationship with TGS in 2008 with a 2D project offshore Somaliland in the Gulf of Aden, which was similarly performed without a safety or security incident. The survey, although acquired away from the main areas of potential piracy, required a comprehensive risk review exercise and mitigation plan with the client and security contractor. During the survey, the offshore safety and security

Over the last decade WGP has targeted and achieved some extraordinary accomplishments which are to the credit to all staff and contractors. It also reflects and defines the whole culture of the company; going the extra mile, creating a meaningful workplace, putting something back into the local and international community and looking to develop solutions and services past the discovery of 'easy oil' and towards the next generation of energy supplies beyond hydrocarbon reliance

infrastructure included a professional chase boat utilised not only to intercept errant vessels, but was also tasked with recording and monitoring water depths as existing charts for the Gulf of Aden were out dated and could not be relied upon. This was an additional operational necessity as the client required a complete, as practicably possible, near shore full fold data set.

The survey was successfully acquired 5,140km of full fold data (99.5% of the pre-plot program), at an average of 85km per day. The 2D seismic survey was successfully completed in four months, including the pre-preparation time for the security plan implementation and resulted in sufficient data being acquired to allow exploration blocks to be licensed by the Somaliland Ministry of Water and Mineral Resources.

Magnetic and gravity

All 2D seismic acquisition operations performed by WGP can be complemented with a dedicated magnetic and gravity data acquisition

service, which is also provided to third party clients who require a cost effective but technically proficient service. WGP's clients include many of the mainstream seismic contractors including TGS Nopec, CGG-Veritas and PGS. 2011 has seen an increased number of clients contract WGP for dedicated Magnetic and Gravity data acquisition and processing services, and it is anticipated that we will see further increased activity through 2012.

...And beyond

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about the author

Kelly Richards has been a part of WGP Group since 2001 when the company was a more family affair. Kelly leads the Marketing and Quality side of the company including the management of the company's visual presence in the industry. She also maintains all quality certifications held by the company.

